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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/803,479	03/18/2004	Setsuya Iwashita	9319G-000741	5515
27572	7590	03/27/2006	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 828 BLOOMFIELD HILLS, MI 48303			HOANG, QUOC DINH	
			ART UNIT	PAPER NUMBER
			2818	
DATE MAILED: 03/27/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/803,479

Applicant(s)

IWASHITA ET AL.

Examiner

Quoc D. Hoang

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 March 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-10, 15 and 16 is/are rejected.
- 7) ☒ Claim(s) 5, 11-14 and 17-20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/18/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Information Disclosure Statement***

1. The information disclosure statement (IDS) filed on 3/18/2004. The references cited on the PTOL 1449 Form have been considered.

### ***Specification***

2. The specification has been checked to the extent necessary to determine the present of all possible minor errors. However, Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Eddy., (US Pat No. 5,527,766).

**Regarding claim 1**, Eddy teaches a ferroelectric film manufacturing method comprising the steps of:

forming a buffer layer 32, which also functions as a sacrificial layer, on a single crystal substrate 30 (col. 5, lines 1-62 and Fig. 3b). *Noted the layered copper oxide material is considered the buffer layer,*

forming a ferroelectric film 34 on the buffer layer 32 (col. 5, lines 1-62 and Fig. 3c). *Noted the first oxide film is considered the ferroelectric film;*

separating the ferroelectric film 34 and the single crystal substrate 30 (col. 5, lines 1-62 and Fig. 3e); and

arranging the ferroelectric film 34 that was separated from the single crystal substrate 30 on any substrates 38 (col. 5, lines 1-62 and Fig. 3f). *Noted that the second film 38 is considered the any substrates.*

**Regarding claim 2**, Eddy teaches a ferroelectric element manufacturing method comprising the steps of:

forming a buffer layer 32, which also functions as a sacrificial layer, on a single crystal substrate 30 (col. 5, lines 1-62 and Fig. 3b). *Noted the layered copper oxide material is considered the buffer layer,*

forming a ferroelectric element 34 on the buffer layer 32 (col. 5, lines 1-62 and Fig. 3c). *Noted the first oxide film is considered the ferroelectric element;*

separating the ferroelectric element 34 and the single crystal substrate 30 (col. 5, lines 1-62 and Fig. 3e); and

arranging the ferroelectric element 34 that was separated from the single crystal substrate 30 on any substrates 38 (col. 5, lines 1-62 and Fig. 3f). *Noted that the second film 38 is considered the any substrates.*

**Regarding claim 3**, Eddy teaches wherein the buffer layer 32 comprises a YBaCuO-type compound with a layered perovskite structure (col. 2, lines 35-40 and col. 5, lines 1-62).

**Regarding claim 4**, Eddy teaches separating the ferroelectric element and the single crystal substrate comprising the steps of:

pasting a supportable material 36 for supporting the ferroelectric element 34 over a top face of the ferroelectric element 34 (col. 5, lines 1-62 and Fig. 3d); and

separating the ferroelectric element 34 from the single crystal substrate 30 by etching the buffer layer 32, after the supportable material 36 has been pasted (col. 5, lines 1-62 and Fig. 3d).

**Regarding claim 6**, Eddy teaches wherein, in a case where a plurality of the ferroelectric elements 34 are formed on the single crystal substrate, the step of separating the ferroelectric elements 34 and the single crystal substrate 30 comprises a step of forming grooves, which extend as far as the buffer layer, between the ferroelectric elements, prior to the step of pasting the supportable material for supporting the ferroelectric elements over the top faces of the ferroelectric elements 34 (col. 5, lines 1-62 and Fig. 3d).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 7-10, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al., Eddy., (US Pat No. 5,527,766) in view of Fischer et al., (US Pat No. 6,677,629 hereinafter "Fischer").

**Regarding claim 7**, Eddy teaches ferroelectric film 34, but does not teach a surface acoustic wave element comprising a piezoelectric thin film, which comprises the ferroelectric film.

However, Fischer teaches a surface acoustic wave element comprising a piezoelectric thin film, which comprises the ferroelectric film (col. 4, lines 50-62 and Fig. 3). Since Eddy and Fischer are all from the same field of endeavor, the purpose disclosed by Fischer would have been recognized in the pertinent art of Eddy. It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to have the piezoelectric thin film, which comprises the ferroelectric film in order to provoke a deformation and excites a surface acoustic wave as taught by Fischer, column 4, lines 56-60.

**Regarding claim 8**, Eddy teaches ferroelectric element 34, but does not teach a surface acoustic wave element comprising a piezoelectric element, which comprises the ferroelectric element.

However, Fischer teaches a surface acoustic wave element comprising a piezoelectric element, which comprises the ferroelectric element (col. 4, lines 50-62 and Fig. 3). Since Eddy and Fischer are all from the same field of endeavor, the purpose disclosed by Fischer would have been recognized in the pertinent art of Eddy. It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to have the piezoelectric element, which comprises the ferroelectric element in order to provoke a deformation and excites a surface acoustic wave as taught by Fischer, column 4, lines 56-60.

**Regarding claim 9**, Eddy teaches ferroelectric element 34, but does not teach a frequency filter comprising: a first electrode, formed on the piezoelectric thin film of the surface acoustic wave element or on a protective film that is provided on the piezoelectric thin film; and a second electrode, formed on the piezoelectric thin film or the protective film, the second electrode resonating at a specific frequency, or a specific band of frequencies, of surface acoustic waves, which are created in the piezoelectric thin film by an electrical signal applied to the first electrode, and converting the surface acoustic waves to an electrical signal.

However, Fischer teaches a frequency filter comprising:

a first electrode 22, formed on the piezoelectric thin film 11 of the surface acoustic wave element (col. 4, lines 50 through col. 5 line 5 and Fig. 3). *Noted that the contact 22 is considered first electrode 22*; and

a second electrode 22, formed on the piezoelectric thin film, the second electrode 22 resonating at a specific frequency of surface acoustic waves, which are created in the piezoelectric thin film by an electrical signal applied to the first electrode, and converting the surface acoustic waves to an electrical signal (col. 4, lines 50 through col. 5 line 5 and Fig. 3). *Noted that the contact 22 is considered second electrode 22*. Since Eddy and Fischer are all from the same field of endeavor, the purpose disclosed by Fischer would have been recognized in the pertinent art of Eddy. It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to have the piezoelectric element, which comprises the ferroelectric

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element, and the first and second electrodes in order to provoke a deformation and excites a surface acoustic wave as taught by Fischer, column 4, lines 56-60.

**Regarding claim 10**, Eddy teaches ferroelectric element 34, but does not teach a frequency filter comprising: a first electrode, formed on the piezoelectric thin film of the surface acoustic wave element or on a protective film that is provided on the piezoelectric thin film; and a second electrode, formed on the piezoelectric thin film or the protective film, the second electrode resonating at a specific frequency, or a specific band of frequencies, of surface acoustic waves, which are created in the piezoelectric thin film by an electrical signal applied to the first electrode, and converting the surface acoustic waves to an electrical signal.

However, Fischer teaches a frequency filter comprising:

a first electrode 22, formed on the piezoelectric thin film 11 of the surface acoustic wave element (col. 4, lines 50 through col. 5 line 5 and Fig. 3). *Noted that the contact 22 is considered first electrode 22*; and

a second electrode 22, formed on the piezoelectric thin film, the second electrode 22 resonating at a specific frequency of surface acoustic waves, which are created in the piezoelectric thin film by an electrical signal applied to the first electrode, and converting the surface acoustic waves to an electrical signal (col. 4, lines 50 through col. 5 line 5 and Fig. 3). *Noted that the contact 22 is considered second electrode 22*. Since Eddy and Fischer are all from the same field of endeavor, the purpose disclosed by Fischer would have been recognized in the pertinent art of Eddy. It would have been obvious to a person of ordinary skill in the art at the time of the



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invention was made to have the piezoelectric element, which comprises the ferroelectric element, and the first and second electrodes in order to provoke a deformation and excites a surface acoustic wave as taught by Fischer, column 4, lines 56-60.

**Regarding claim 15**, Eddy teaches ferroelectric element 34, but does not teach an electronic apparatus comprising the frequency filter.

However, Fischer teaches an electronic apparatus 10 comprising the frequency filter (col. 4, lines 50 through col. 5 line 5 and Fig. 3). *Noted that the structure 10 is considered the electronic apparatus.* Since Eddy and Fischer are all from the same field of endeavor, the purpose disclosed by Fischer would have been recognized in the pertinent art of Eddy. It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to have the piezoelectric element, which comprises the ferroelectric element, and the electronic apparatus comprising the frequency filter in order to provoke a deformation and excites a surface acoustic wave as taught by Fischer, column 4, lines 56-60.

**Regarding claim 16**, Eddy teaches ferroelectric element 34, but does not teach an electronic apparatus comprising the frequency filter.

However, Fischer teaches an electronic apparatus 10 comprising the frequency filter (col. 4, lines 50 through col. 5 line 5 and Fig. 3). *Noted that the structure 10 is considered the electronic apparatus.* Since Eddy and Fischer are all from the same field of endeavor, the purpose disclosed by Fischer would have been recognized in the pertinent art of Eddy. It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to have the piezoelectric element, which

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comprises the ferroelectric element, and the electronic apparatus comprising the frequency filter in order to provoke a deformation and excites a surface acoustic wave as taught by Fischer, column 4, lines 56-60.

***Allowable Subject Matter***

7. Claims 5, 11-14, 17-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

None of the references of record teaches or suggest the claim ferroelectric film manufacturing method having the steps of applying adhesive over a top face of any substrates and a bottom face of the ferroelectric element, and joining the separated ferroelectric element to any substrates, and removing the supportable material that was pasted on the top face of the ferroelectric element and among other steps/limitations as claimed in dependent claim 5.

None of the references of record teaches or suggest the claim ferroelectric film manufacturing method having an oscillator comprising: an electrode for applying electrical signals, formed on the piezoelectric thin film of the surface acoustic wave element or on a protective film that is provided on the piezoelectric thin film, the electrode generating surface acoustic waves in the piezoelectric thin film by using the applied electrical signals, and an oscillating circuit equipped with an electrode for resonance and a transistor, the oscillating circuit being formed on the piezoelectric thin

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film or the protective film, and resonating specific frequency components, or a specific band of frequency components, of the surface acoustic waves that were generated by the electrode for applying electrical signals and among other steps/limitations as claimed in dependent claims 11 and 12.

**Conclusion**

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quoc Hoang whose telephone number is (571) 272-1780. The examiner can normally be reached on Monday-Friday from 8:00 AM to 5:00 PM.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone numbers of the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and (571) 273-8300 for After Final communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Quoc Hoang  
Patent examiner/AU 2818

*Quoc Hoang*  
03/14/2006